BPL ISSUES

The potential interference of the proposed BPL systems includes mention of 10, 000 watt systems coupled to very long line antennas. No doubt there would be many such transmitters around the USA, probably several in the large cities to serve the many AC power subnetworks Amateur operators with eirp of about 100 watts readily produce field strengths of over 100 microvolts/meter in foreign countries, half way around the world. A single BPL systems, with antenna gain of 0 dB, which can be greatly exceeded by long lines, would produce an eirp at least 20 dB stronger. In combination, many such systems across the US would produce an impenetrable jammer to the entire world, over the entire HF and much of the VHF spectrum. By the way, ionospheric propagation at 80 MHz is not rare, as I'm sure the FCC already knows.

Although there is some proposed advantage to consumers that this technology would be less costly than current means, there is no cost data presented to validate this premise. In fact, the profit advantage to the utility industries seems to be the stronger factor in this argument. No mention was made of profit to the consumer, nor any proposed reduction or offset in utility rates, in fact, it segregates the untility watchdogs into the local utility commissions (for power) and the singular FCC office, for BPL. This approach absolutely prevents any rebate of BPL revenues to consumers, or revenue sharing for power vs. BPL costs. Consumers will no doubt have to pay for the terminal equipment in their homes, and support both non-recurring and recurring costs of the BPL infrastructure in the power plant facilities. If this added revenue to the utilities were used to reduce power rates, there might some actual merit to the concept. If power rates remain the same, we can only assume the major beneficiary will be the power companies. How does the FCC intend to control rates for this service?

Access not using AC power lines was not addressed. But it opens the question of using HF radio technology, broadband, of course, to interoperate with the BPL systems. The concept of such technology installed in every automobile, 18 wheeler, commuter train, or a remotely stationed oil rig operating from isolated power generators, must be considered when evaluating interference effects. Since a "smart highway" technology could spring from similar internet ports in vehicles, there would be general interest and experimentation of such technology. Radiated BPL from the millions of vehicles in our larger cities would probably interfere with the power line conducted BPL, not to mention even more world wide interference. Dissemination of such technology over the next 10 or 20 years is not unrealistic. HF radiation, bilateral of course, must result from this technology, and using that characteristic for mobile platforms is easily predicted.

Interference effects world wide impacts all HF services, civilian and military, especially for the many remote locations in the world where HF is the only communications means available. Most of the world is not developed like US or European areas, and in fact, there are N. American areas (e.g. Alaska, Mexico, and much of Canada) that still depends on HF for basic communications. Lets not forget ships and aircraft around the world that still us HF for communications.

It will be prudent to establish a procedure for handling foreign complaints of interference in advance of allowing BPL technology to proceed. No doubt there will be some, and nearby countries will be the most susceptible. Once foreign countries establish interference limits from foreign radiation, or have to increase their own HF/VHF transmitters and local BPL levels, foreign relations will have new issues to wrangle. How will the FCC process these foreign complaints to BPL?

Another interference issue comes to mind. What is the user population limit that can occupy a BPL network? How many such networks can co-exist in a large metropolitan area, and what are the implications of good HF propagation causing LA area signals to interfere with BPL systems in nearby smaller communities? Or even in smaller communities not so near? When interference disrupts service, how do users trouble shoot the problem, or how does the utility restore service under such conditions?

One approach to interference mitigation is to excise frequency bands in the overall operating range. Has the utility industry responded to this approach? Who would decide which frequencies are excised, and which are allocated to BPL? Have the interests of HF broadcasters, amateur radio service, radio astronomers, military, and other users been cataloged and accounted for? Has the FCC proposed a frequency allocation for this type of service, in the context of any spectrum usage application? Just because power lines are intended as transmission lines does not prevent them from radiating like any antenna will, and how will the FCC police these effects? Will the FCC need to establish special monitoring stations with location finding capability for this service? Has that been accounted for in the overall costs and processes?

Much of these questions can be answered or estimated by analysis, using limited field test data. Without serious, in depth, and absolutely honest consideration of all issues in large scale system usage, this could become an interference environment that impacts AM and FM broadcast radio, all HF radio services, international communications, emergency and remote area communications, and of course, TV broadcasting. We rely on the FCC to act as honest broker for the US population, considering all technical aspects and all taxpayers, whether internet users or short wave listeners. In this case, the ramifications are world wide, and FCC needs to have that perspective on the issues.

By the way, has anyone compared the cost of microwave last mile to this system, accounting for all issues and costs, for suppliers and users, NRE and RE, across the globe? Perhaps that needs to be done and presented to the world at large.